

The International Electrotechnical Commission (IEC) Power Curve Standards Technical committee has drafted a methodology to attempt to standardize the procedure for production of wind turbine power curves. The draft standard includes a remote sensor classification scheme to provide traceable uncertainty assessments for the measurements from RSDs.

As described in prior literature, in order to assess the uncertainty contribution of an RSD, a classification test and a verification test are undertaken. In the classification test, the sensitivity of an RSD to environmental parameters is assessed through the deployment of units close to a meteorological mast with well-calibrated cup anemometers for an extended period of time, ideally covering a wide range of environmental conditions. The differences in measured wind speed between the RSD and the mast are considered as a function of one environmental parameter at a time. An accuracy class for the RSD is derived by combining the results of these sensitivity analyses, suitably extrapolated to cover a similar range of conditions as those used in the classification of cup anemometers. The verification test aims to confer the traceability of a particular device to international standards, in the form of an uncertainty. The verification test also allows for an assessment of random contributions to measurement uncertainty through a statistical analysis of a series of observations.

Two production Triton SoDARs were classified and validated at the ECN and Ecofys test sites in the Netherlands in accordance with the IEC guidelines. Results for these studies will be presented and compared to a validation study conducted using 25 met mast / Triton pair correlations from four different wind regimes and seasonal conditions from around the globe.